PRIMARY BLADDER SUTURE, WITH ESPECIAL REFERENCE TO SUPRA-PUBIC CYSTOTOMY.*

BY LOUIS FRANK, M. D.,

Professor of Abdominal Surgery and Gynecology, University of Louisville, Medical Dept.

The history of the surgical treatment of stone in the bladder is a reflection of the evolution of surgery. It also illustrates very aptly that there is little new in operative surgery, and that with the application of the new principles of asepsis and avoidance of infection many and valuable suggestions and practices of forgotten days may be put into execution without the fear of a deterring mortality which practically forbade them and made resort to cruder methods a necessity and not a choice.

This, as also the title of my paper, will indicate that I have nothing new to offer nor any claim of priority to submit. I wish only to add my voice in the establishment of a sound surgical practice, and by your discussion aid in lifting bladder surgery and the treatment of vesical calculus out of the darkness which has surrouned it since the time of the pre-Christian era.

Perineal cystotomy for calculus disease, as in fact all perineal operations for relief of bladder disturbances either by stone, by new growths, or prostatic enlargement, are relics of barbarism, and relics which we have not improved upon since in our possession. Celsus' description and technique for perineal section would answer today were one to judge by the current text-books. I would submit that in this day of clean surgery and anatomic knowledge the approach par excellence for intravesical surgery or for prostatic surgery is suprapubicly. If drainage is desired, it has been shown and can be easily proven that it excels that obtained by the perineal opening.

So also has it been demonstrated that the fear of disaster in intra-peritoneal bladder operations was unfounded. We have saved gunshot wounds of the bowel, we have incised and sutured gut and stomach and undertaken work with suture, ligature and otherwise through areas of possible infection, and yet have been prevented, by legends which we in these other fields ceased long ago to respect, from trespassing the bladder through the same approach and applying these same surgical principles.

Harrington in 1893 and Mayo very recently have both proposed and described a technique for transperitoneal bladder surgery for the removal of new growths, and further attention has been called to this work by others.

The papers by Mayo and Goldsmith, and the discussion which followed at the meeting of this society last year, will, we trust, do much to remove the fear of bladder injury incident to abdominal surgery, which is still so much in evidence, just as it has and will continue to stimulate men to desert the ruts in bladder work and place the operative technique of this viscus on the same up-to-date and stable footing as intestinal and gastric surgery. Johnson carried out immediate suture of the supra-pubic wounds made for stone removal twenty years ago, as did also Westmoreland, and the latter reports having done primary closing in numerous instances.

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This seems to have been overlooked by even so great a surgeon as Senn, who, so late as 1890, graphically pictures the danger of supra-pubic cystotomy. Anderson, in the same year (1890) suggested and advocated primary closure, and offers a way of testing the closure by water or air distention. I have been much impressed by the lack of attention to these suggestions, and to the work in this line as reflected in modern and recent surgical text-books, all of which with few exceptions speak of the many dangers and difficulties attending supra-pubic work and lean by inference or by urgent advice to the perineal operation. With few exceptions, a perineal operation is never indicated for surgery of the prostate or bladder, and the chapters on bladder surgery must be entirely rewritten. Why it is that some G. U. surgeons prefer the older methods, even to the use of the lithotrite? I leave you to infer.

My own attention was first directed to this matter some years ago in dealing with an extensive intra-peritoneal lesion of the bladder arising in the course of operation for pelvic suppuration. A portion of the bladder fundus was included in a ligature and cut away, the accident not being recognized until after inspection by an assistant of the removed specimen. The bladder was at once freed from the ligature and direct primary suture practiced with urethral drainage, resulting in perfect recovery. Later, in operating on a boy for vesical calculus, I saw no reason why an attempt should not be made to close the bladder wound primarily. I did so, draining the space of Retzius for a few days and the bladder *per urethra*. There was primary union, short convalescence, and a most satisfactory and perfect result. The case was reported at the time and met with the usual rebuff of a supposed inovation. This was particularly true from the older surgeons. However, a second case with the same good result caused one of my colleagues to try the same operation with the result of convincing him it was not only quite feasible, but desirable, in that convalescence was shortened, and many disagreeable and obnoxious features attendant upon bladder drainage were done away with. Since then we have had other cures and some failures. The failures were in badly infected bladders. It is quite possible that even in these we would have had a primary closure had our procedure been a little different. There are two necessary factors in securing good results: First, the prevention of soiling of the operative field; second, a perfectly tight closure.

In our cases we have brought about as nearly as possible under the existing circumstances a pre-operative clean condition of the bladder. This we have secured by the administration of urotropin in conjunction with bladder irrigation with boric acid solution. At the time of operation the bladder was distended with the latter solution, which we now think is a mistake in the bad infections, as it is theoretically and practically impossible to secure an aseptic urine, or in other words, a sterile bladder wall, and the distending solution serves to distribute the infection most thoroughly within the bladder, thus hindering rather than favoring asepsis of the bladder wall. In the future, therefore, we shall, when necessary or desirable to distend the bladder at the operation, resort to air for this purpose, as this will avoid the bacterial distribution by means of water should this latter be put into the bladder before incising it, and we will thereby be able to prevent soiling the bladder and abdominal wound with even dilated bacterial cultures. As a matter of fact, in the infected cases where success was not met with, the infection and breaking down began in the abdominal wall, involving the bladder union secondarily. We believe that it is not even necessary to distend the bladder at the operation, as its wall can be easily recognized, lifted up and incised even when empty.

For closure we prefer chromic catgut in two layers. The first layer is put in as an interrupted suture, each stitch being about a quarter to three-eighths of an inch apart, and not penetrating the mucosa of the bladder. The second layer of sutures is a continuous one, placed about the same distance apart in such manner that the bite of the stitches lies between the sutures of the deeper layer, thus making an air-tight and water-tight closure. The second row of sutures are put in *a la* Lembert. While this latter is not necessary when the peritonium is not incised, its necessity becomes evident if we are working inside the cavity.

We have always drained the bladder by the urethra for several days after the operation, the time varying from four days to a week. Through the retention drainage catheter the bladder is irrigated daily with boric acid solution, using at each injection three or four ounces of the solution, and repeating this a number of times until a quart or so has been used for the irrigation at each sitting.

We further think that where a severe infection exists at the time of or preceding the operation, it is advisable to drain for a day or two the space of Ritzius, particularly if we have feared soiling the operative field with infected urine or with a possibly infected distention solution.

We would suggest that the plan of direct suture of the bed of the prostate might be used with primary bladder closure in suprapubic prostatectomy. While we have not as yet tried this, we shall do so, and can see no reason why, if the hemorrhage is controlled and absorbable material used, this should not be feasible.

In conclusion, we desire again to state that it has not been our purpose to offer anything new, but that we have brought this subject up in the hope that through the discussion a more modern technique, more in keeping with recent surgical advancement, may be applied in vesical surgery.

"The Atherton."